# Interface Issues associated with the ITER ECH system

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In order to insure a reliable and cohesive ECH system, the interfaces between subsystems have to be thoroughly investigated in advance of the detailed design phase. This is even more true for the ITER ECH system, which will be an in kind procurement consisting of four different types of gyrotrons (from EU, IN, JA and RF), transmission lines (from US) and two launcher (from EU and US). Each of these subsystems have to interface not only between themselves but also with the ITER auxiliary systems and the plasma (in the case of the launcher). Proper description of each interface boundary is essential in order to assemble and operate the entire system as a single unit. In addition, the present ITER ECH system was essentially specified prior to 2000, since then progress has been made in the development of high power, long pulse systems and associated components. The ultimate physics performance and operational reliability is limited by this older technology, which has not taken advantage of the knowledge and experience gained in operating the multi-megawatt ECH systems on present tokamaks and stellarators.

The objective of this paper is to review the present ITER ECH system, which includes the power supplies, gyrotrons, transmission lines and launchers. The interfaces between these subsystems will be described and when possible improvements to each interface will be proposed. Also, modifications to key components will be proposed with the aim of enhancing the performance, increasing the reliability, reducing the complexity and/or reducing the costs..